

# PATENT ABSTRACTS OF JAPAN

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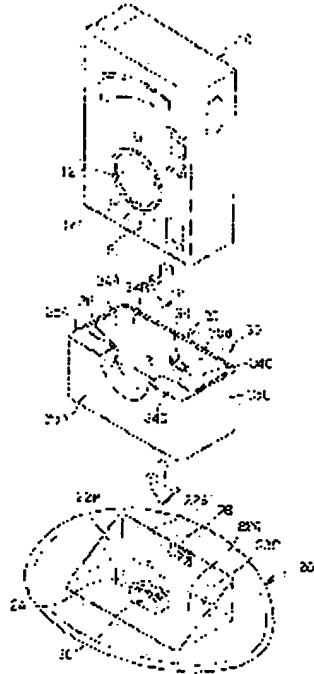
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## (54) ADAPTER FOR CRADLE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an adapter for a cradle with which a common cradle can be used for cameras of different types.

**SOLUTION:** The outside wall 35 of the adapter for the cradle 30 is formed so that the adapter 30 can be housed in the attaching space S of the cradle 20 and the wall 35 may abut on an attaching wall 22 when the adapter 30 is housed. The inside wall 34 of the adapter 30 is formed so that a digital camera 10 can be inserted in the adapter 30 and the inserted camera 10 may abut on the wall 34. The inside wall 34 of the adapter 30 is made to have thickness and shape that the first and the second connection terminals 14 and 16 of the camera 10 are connected to the third and the fourth connection terminals 24 and 26 of the cradle 20 in a state where the adapter 30 is housed in the attaching space S of the cradle 20.



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**CLAIMS**

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[Claim(s)]

[Claim 1]

The body of an adapter which can insert a camera,

The attaching part-ed which makes said body of an adapter hold with a predetermined cradle,

The attaching part which is constituted corresponding to the configuration of said camera, and holds said camera on said body of an adapter so that the connection terminal of this camera and the connection terminal with which said cradle corresponds may be connected,

The adapter for \*\*\*\*\* cradles.

[Claim 2]

The adapter for cradles according to claim 1 characterized by considering as the configuration which avoids the space which the lens of said camera lets out where said camera is fixed to said cradle.

[Claim 3]

The adapter for cradles according to claim 1 or 2 further equipped with the power-source operating member which is interlocked with actuation of installation of the camera to a cradle, and operates the electric power switch of said camera to an ON state.

[Claim 4]

Said power-source operating member is an adapter for cradles according to claim 3 which is interlocked with actuation of removal from said cradle of the camera attached in said cradle, and is characterized by operating the electric power switch of said camera to an OFF state.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

[0001]

**[Field of the Invention]**

This invention relates to the adapter for cradles used in case a camera is attached in a cradle.

[0002]

**[Description of the Prior Art]**

A cradle may be used, in order to connect a camera with an external instrument or to charge at a camera. If the configuration and size of a camera differ from each other, since the same thing cannot be used for this cradle, the thing of dedication is manufactured for every model of camera (patent reference 1 and patent reference 2 reference). Therefore, the manufacturer needed to manufacture the cradle of dedication for every model of camera.

[0003]

**[Patent reference 1]**

JP,2002-252801,A official report

**[Patent reference 2]**

JP,2002-218300,A official report

[0004]

**[Problem(s) to be Solved by the Invention]**

This invention is accomplished in consideration of the above-mentioned fact, and aims at offering the usable adapter for cradles for a cradle common to the camera of a different model.

[0005]

**[Means for Solving the Problem]**

In order to attain the above-mentioned purpose, the adapter for cradles according to claim 1 is constituted corresponding to the body of an adapter which can insert a camera, the attaching part-ed which makes said body of an adapter hold with a predetermined cradle, and the configuration of said camera, and is constituted including the attaching part which holds said camera on said body of an adapter so that the connection terminal of this camera and the connection terminal with which said cradle corresponds may be connected.

[0006]

By the adapter for cradles of this invention, the body of an adapter is held by the attaching part-ed at a predetermined cradle. And a camera is held at said body of an adapter so that the connection terminal of a camera and the connection terminal with which a cradle corresponds may be connected by the attaching part. This attaching part is constituted corresponding to the configuration of a camera. Therefore, even if it is the camera of a different configuration, it can be held at a predetermined cradle and can be made to connect with the connection terminal with which a predetermined cradle corresponds. That is, according to the adapter for cradles of the above-mentioned configuration, even if it is the camera of a different configuration, the same cradle can be used in common.

[0007]

In addition, like, the adapter for cradles of this invention can also be characterized by considering as the configuration which avoids the space which the lens of said camera lets out, where [ according to claim 2 ] said camera is fixed to said cradle.

[0008]

According to the above-mentioned configuration, where a camera is fixed to a cradle, when the lens of a camera lets out, it can avoid un-arranging [ that the adapter for cradles and a lens collide ].

[0009]

Moreover, the adapter for cradles of this invention is constituted, including further the power-source operating member according to claim 3 which is interlocked with actuation of installation of the camera to a cradle like, and operates the electric power switch of said camera to an ON state.

[0010]

Although it is necessary to make the power source of a camera into an ON state to attach a camera in a cradle and perform predetermined actuation of charge, a communication link, etc., according to the above-mentioned configuration, the electric power switch of a camera is operated by the power-source operating member to an ON state in the case of installation of the camera to the cradle through the adapter for cradles. Therefore, a user does not need to perform actuation which turns on the power source of a camera after attachment of the camera to a cradle, and convenience becomes high.

[0011]

Moreover, it can also be characterized by interlocking with [ actuation / according to claim 4 / of removal from said cradle of the camera with which said power-source operating member was attached in said cradle like ] the adapter for cradles of this invention, and operating the electric power switch of said camera to an OFF state.

[0012]

Since predetermined actuation of charge, a communication link, etc. is ended in case a camera is removed from a cradle, a user wants to make the power source of a camera into an OFF state in many cases. In case the camera attached in the cradle is removed from a cradle according to the above-mentioned configuration, the electric power switch of a camera is operated by the power-source operating member to an OFF state. Therefore, a user does not need to perform actuation which turns off the power source of a camera in case a camera is removed from a cradle, and convenience becomes high.

[0013]

[Embodiment of the Invention]

[The 1st operation gestalt]

Hereafter, the 1st operation gestalt of the adapter for cradles applied to this invention with reference to a drawing is explained.

[0014]

First, the adapter 30 for cradles which uses it in case the digital camera 10 shown in drawing 1 is attached in the general-purpose cradle 20 is explained.

[0015]

The adapter 30 for cradles in this operation gestalt is constituted by the body 32 of an adapter as shown in drawing 1. The body 32 of an adapter is rectangle tubed, and the insertion space R is formed of paries-medialis-orbitae 34D (these four are summarized below and it is called "the paries medialis orbitae 34") of paries-medialis-orbitae 34B of the paries medialis orbitae 34A and 34C of the flank of a cylinder, and the tooth-back section of a cylinder, and the front section of a cylinder. Moreover, the outside of a cylinder is formed by paries-medialis-orbitae 35D (these four are summarized below and it is called "the paries lateralis orbitae 35") of paries-medialis-orbitae 35B of the paries lateralis orbitae 35A and 35C of a flank, and the tooth-back section of a cylinder, and the front section of a cylinder.

[0016]

A digital camera 10 is equipped with a lens barrel 12, the 1st connection terminal 14, and the 2nd connection terminal 16. If the power source which a digital camera 10 does not illustrate is turned on, it will let out a lens barrel 12 ahead of a digital camera 10. The 1st connection terminal 14 is used as the connection terminal for current supply, and let the 2nd connection terminal 16 be a connection terminal for USB.

[0017]

the half-ellipse by which, as for the cradle 20, the pars basilaris ossis occipitalis was made the plane -- it is spherical and the attachment space S for attaching a digital camera 10 in a center section is formed. The attachment space S is surrounded and constituted by the attachment walls 22A and 22C of a side face, on the back attachment wall 22B, and attachment wall 22D (these four are summarized below and it is called "the attachment wall 22") at the bottom. Attachment wall 22D is equipped with the 3rd connection terminal 24 and

the 4th connection terminal 26. The 3rd connection terminal 24 is used as the connection terminal for current supply corresponding to the 1st connection terminal 14, and let the 4th connection terminal 16 be a connection terminal for USB corresponding to the 2nd connection terminal 16.

[0018]

\*\*\*\* 36 is formed in the attachment wall 34D bottom of the adapter 30 for cradles. The body 32 of an adapter is made into the configuration which avoids the space which a lens barrel 12 lets out by forming \*\*\*\* 36.

[0019]

The engagement hole 38 is formed in paries-medialis-orbitae 32B of the adapter 30 for cradles. The engagement heights 28 are formed in attachment wall 22C of a cradle 20. Engagement of the engagement heights 28 is enabled at the engagement hole 38.

[0020]

When the adapter 30 for cradles can be contained to the attachment space S of a cradle 20 and it is contained, the paries lateralis orbitae 35 of the adapter 30 for cradles is formed so that paries lateralis orbitae 35A, 35B, and 35C may be contacted by the attachment walls 22A, 22B, and 22C, or so that it may be stopped with backlash.

[0021]

Moreover, the paries medialis orbitae 34 of the adapter 30 for cradles is formed so that the digital camera 10 which could insert the digital camera 10 in the adapter 30 for cradles, and was inserted may be contacted by the paries medialis orbitae 34, or so that it may be stopped with backlash.

[0022]

Furthermore, the paries medialis orbitae 34 of the adapter 30 for cradles is in the condition that the adapter 30 for cradles was contained in the attachment space S of a cradle 20, and is made into the thickness and the configuration where the 1st connection terminal 14 and the 2nd connection terminal 16 of a digital camera 10 are connected with the 3rd connection terminal 24 of a cradle 20, and the 4th connection terminal 26. As shown in drawing 2, specifically The distance between the 1st connection terminals 14 in the condition that the external surface and digital camera 10 of a background of the adapter 30 for cradles were inserted in the adapter 30 for cradles P1, [ of paries-medialis-orbitae 34B ] Distance between P3 and the 2nd connection terminal 16 is set to P4 for the distance between the 1st connection terminals 14 in the condition that the distance between the 2nd connection terminals 16 was inserted in the external surface and digital camera 10 of a background of P2 and the adapter 30 for cradles by the adapter 30 for cradles. [ of paries-medialis-orbitae 34A ] If distance between Q3 and the 4th connection terminal 26 is set [ the distance between Q1 and the 4th connection terminal 26 ] to Q4 for the distance between Q2, attachment wall 22 of cradle 20 A, and the 3rd connection terminal 24, the distance between attachment wall 22B of a cradle 20, and the 3rd connection terminal 24 It is referred to as P1=Q1, P2=Q2, P3=Q3, and P4=Q4.

[0023]

Next, the adapter 50 for cradles which uses it in case the digital camera 40 shown in drawing 3 is attached in the general-purpose cradle 20 is explained. In addition, the sign same about the same part as the above-mentioned digital camera 10 and the adapter 30 for cradles is attached, and detailed explanation is omitted.

[0024]

The adapter 50 for cradles is constituted by the body 52 of an adapter as shown in drawing 3. The body 52 of an adapter is rectangle tubed, and the insertion space R is formed of paries-medialis-orbitae 54D (these four are summarized below and it is called "the paries medialis orbitae 54") of paries-medialis-orbitae 54B of the paries medialis orbitae 54A and 54C of the flank of a cylinder, and the tooth-back section of a cylinder, and the front section of a cylinder. Moreover, the outside of a cylinder is formed by paries-medialis-orbitae 55D (these four are summarized below and it is called "the paries lateralis orbitae 55") of paries-medialis-orbitae 55B of the paries lateralis orbitae 55A and 55C of a flank, and the tooth-back section of a cylinder, and the front section of a cylinder.

[0025]

As for the digital camera 40, the thickness has become thicker than a digital camera 10. About other configurations, it is the same as that of a digital camera 10 almost.

[0026]

When the adapter 50 for cradles can be contained to the attachment space S of a cradle 20 and it is contained,

the paries lateralis orbitae 55 of the adapter 50 for cradles is formed so that paries lateralis orbitae 55A, 55B, and 55C may be contacted by the attachment walls 22A, 22B, and 22C, or so that it may be stopped with backlash.

[0027]

Moreover, the paries medialis orbitae 54 of the adapter 50 for cradles is formed so that the digital camera 40 which could insert the digital camera 40 in the adapter 50 for cradles, and was inserted may be contacted by the paries medialis orbitae 54, or so that it may be stopped with backlash.

[0028]

Furthermore, the paries medialis orbitae 54 of the adapter 50 for cradles is in the condition that the adapter 50 for cradles was contained in the attachment space S of a cradle 20, and is made into the thickness and the configuration where the 1st connection terminal 14 and the 2nd connection terminal 16 of a digital camera 40 are connected with the 3rd connection terminal 24 of a cradle 20, and the 4th connection terminal 26. As compared with the distance between paries-lateralis-orbitae 35D of the adapter 30 for cradles shown in drawing 1 and drawing 2, and paries-medialis-orbitae 35B, the distance between paries-lateralis-orbitae 55D and paries-medialis-orbitae 55B is long, namely, the thickness of a member is thick.

[0029]

Next, an operation of this operation gestalt is explained.

[0030]

First, the adapter 30 for cradles for digital camera 10 is explained. If the adapter 30 for cradles is attached in a cradle 20, the engagement heights 28 will engage with the engagement hole 38. And if a digital camera 10 is inserted in the insertion space R of the adapter 30 for cradles, a digital camera 10 will be contacted by the paries medialis orbitae 34 of the body 32 of an adapter held at the attachment walls 22A, 22B, and 22C, and attachment wall 22D. Therefore, a digital camera 10 can be attached in a cradle 20 through the adapter 30 for cradles. Moreover, the 1st connection terminal 14 is connected with the 3rd connection terminal 24 through the adapter 30 for cradles.

[0031]

Next, the adapter 50 for cradles for digital camera 40 is explained. If the adapter 50 for cradles is attached in a cradle 20, the engagement heights 28 will engage with the engagement hole 38. And if a digital camera 40 is inserted in the insertion space R of the adapter 50 for cradles, a digital camera 40 will be contacted by the paries medialis orbitae 54 of the body 52 of an adapter held at the attachment walls 22A, 22B, and 22C, and attachment wall 22D. Therefore, a digital camera 40 can also be attached in the above and the common cradle 20 through the adapter 50 for cradles. Moreover, the 1st connection terminal 14 is connected with the 3rd connection terminal 24 through the adapter 50 for cradles.

[0032]

Even if it will be the camera of a different configuration if the adapters 30 and 50 for cradles of the configuration according to the configuration of a digital camera are used as explained above, the common cradle 20 can be used. Consequently, it becomes unnecessary to manufacture the cradle of dedication for every model of digital camera, and a manufacturing cost can be made low.

[0033]

In addition, with this operation gestalt, although \*\*\*\* 36 was formed in the body 32 of an adapter, if it is an adapter for cradles for the digital cameras of the type which a lens barrel does not let out, it is not necessary to necessarily form \*\*\*\* 36.

[The 2nd operation gestalt]

Next, the 2nd operation gestalt is explained. With this operation gestalt, the sign same about the same part as the 1st operation gestalt is attached, and detailed explanation is omitted.

The adapter 70 for cradles of this operation \*\*\*\*\* is constituted by the body 72 of an adapter as shown in drawing 4. The body 72 of an adapter is rectangle tubed, and the insertion space R is formed of the paries medialis orbitae 74A, 74B, 74C, and 74D (these four are summarized below and it is called "the paries medialis orbitae 74") of a cylinder.

[0034]

A digital camera 80 equips a front face with the power-source tongue 18, and equips a wrap location with the lens barrier 19 for the delivery opening 13 of a lens barrel 12. The power-source tongue 18 is tabular and is

made circular [\*\*\*\*]. When the power-source tongue 18 is moved in a lens barrel 12 and the direction (the direction of X) to leave, while the lens barrier 19 also moves in the direction of X, the delivery opening 13 of a lens barrel 12 is opened wide and a power source is turned on, a lens barrel 12 lets out. If the power-source tongue 18 is moved in a lens barrel 12 and the direction (the direction of Y) which approaches from this condition, a lens barrel 12 is contained inside the delivery opening 13, the delivery opening 13 will be moved to the lens barrier 19 in a wrap location, the delivery opening 13 will be closed, and a power source will be turned OFF. (The location of the power-source tongue 18 of the location where the delivery opening 13 is opened wide below is called "on position", and the location of the power-source tongue 18 of the location where the delivery opening 13 is closed is called "off position")

a cradle 60 -- a half-ellipse -- it is spherical and the attachment space S for attaching a digital camera 50 in a center section is formed. The attachment space S is surrounded and constituted by five attachment walls 62A, 62B, 62C, 62D, and 62E (these five are summarized below and it is called "the attachment wall 62").

Attachment wall 62E is equipped with the 3rd connection terminal 24 and the 4th connection terminal 26.

[0035]

\*\*\*\* 76 and \*\*\*\* 66 are respectively formed in the attachment wall 74D bottom of the adapter 70 for cradles, and the top center section of attachment wall 62D of a cradle 60. The body 72 of an adapter and the cradle 60 are respectively made into the configuration which avoids the space which a lens barrel 12 lets out by forming \*\*\*\* 76 and \*\*\*\* 66.

[0036]

The power-source actuation heights 78 are formed in the top center section of attachment wall 74D. The power-source actuation heights 78 have the thin thickness by the side of the upper part, it considers as the shape of a taper which becomes thick gradually toward the bottom, and tongue engagement slot 78A which can be engaged in the power-source tongue 18 of a digital camera 80 is formed inside the power-source actuation heights 78. Let distance from tongue engagement slot 78A to the lower limit of the adapter 70 for cradles, and distance from the on position of the power-source tongue 18 of a digital camera 50 to a lower limit be the equal distances.

[0037]

In addition, about the size of the predetermined parts of a digital camera 50, the adapter 70 for cradles, and a cradle 60, since it is the same as that of the 1st operation gestalt, detailed explanation is omitted.

[0038]

Next, an operation of this operation gestalt is explained.

[0039]

The adapter 70 for cradles is attached in a cradle 60, and if the digital camera 50 which has the power-source tongue 18 in an off position is inserted in the insertion space R of the adapter 70 for cradles, as shown in drawing 5 (A), the power-source tongue 18 will pinch and it will engage with engagement slot 78A. If a digital camera 50 is further moved downward from this condition, the power-source tongue 18 moves in the direction of X, the lens barrier 19 will also move in the direction of X, and the delivery opening 13 will be opened wide. And as shown in drawing 5 (B), it moves to on position, a power source is turned on, and a lens barrel 12 lets out the power-source tongue 18.

[0040]

A digital camera 50 is contacted by the paries medialis orbitae 34 of the body 32 of an adapter fixed to the attachment walls 62A, 62B, 62C, and 62D, and attachment wall 62E at this time. Moreover, the engagement heights 28 engage with the engagement hole 38. Therefore, a digital camera 50 is attached in a cradle 60 through the adapter 70 for cradles.

[0041]

Moreover, through the adapter 70 for cradles, the 1st connection terminal 14 is connected with the 3rd connection terminal 24, and the 2nd connection terminal 24 is connected with the 4th connection terminal 26.

[0042]

In case a digital camera 80 is removed from a cradle 60, a user draws out only a digital camera 80 from the adapter 70 for cradles, suppressing the side face of the adapter 70 for cradles. Since the power-source tongue 18 is engaging with tongue engagement slot 78A at this time, it is moved in the direction of Y. Thereby, a lens barrel 12 is contained, the lens barrier 19 is also moved in the direction of Y, the power-source tongue 18 moves

to an off position, and a power source is turned off.

[0043]

According to this operation gestalt, like the 1st operation gestalt, even if the configuration of a digital camera differs from size, a cradle 60 can be used in common by using the adapter 70 for cradles for every digital camera. Consequently, it becomes unnecessary to manufacture the cradle of dedication for every model of digital camera, and a manufacturing cost can be made low.

[0044]

Moreover, although it is necessary to make the power source of a digital camera 80 into an ON state to attach a digital camera 80 in a cradle 60 and perform predetermined actuation of charge, a communication link, etc., according to this operation gestalt, the power-source tongue 18 is moved to on position by tongue engagement slot 78A of the power-source actuation heights 78 in the case of installation of the digital camera 80 to the cradle 60 through the adapter 70 for cradles. Therefore, a user does not need to perform actuation which turns on a power source after attachment of the digital camera 80 to a cradle 60, and convenience becomes high.

[0045]

Moreover, since predetermined actuation of charge, a communication link, etc. is ended in case the cradle 60 digital cameras 80 are removed, a user wants to make a power source into an OFF state in many cases. In case the digital camera 80 attached in the cradle 60 through the adapter 70 for cradles is removed from the adapter 70 for cradles according to this operation gestalt, the electric power switch of a digital camera 80 is operated by tongue engagement slot 78A of the power-source actuation heights 78 to an OFF state. Therefore, a user does not need to perform actuation which turns off a power source in case a digital camera 80 is removed from a cradle 60, and convenience becomes high.

[0046]

[Effect of the Invention]

As explained above, according to the adapter for cradles of this invention, the body of an adapter is held by the attaching part-ed at a predetermined cradle. And a camera is held at said body of an adapter so that the connection terminal of a camera and the connection terminal with which a cradle corresponds may be connected by the attaching part. This attaching part is constituted corresponding to the configuration of a camera. Therefore, even if it is the camera of a different configuration, it can be held at a predetermined cradle and can be made to connect with the connection terminal with which a predetermined cradle corresponds.

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view of the digital camera of the 1st operation gestalt, the adapter for cradles, and a cradle.

[Drawing 2] It is drawing showing the base of the digital camera of the 1st operation gestalt, the top face of the adapter for cradles, and the top face of a cradle.

[Drawing 3] It is the perspective view showing other examples of the digital camera of the 1st operation gestalt, and the adapter for cradles.

[Drawing 4] It is the perspective view of the digital camera of the 2nd operation gestalt, the adapter for cradles, and a cradle.

[Drawing 5] It is the side elevation showing the condition of attaching the digital camera of the 2nd operation gestalt in a cradle through the adapter for cradles.

[Description of Notations]

10, 40, 80 Digital camera (camera)

12 Lens Barrel (Lens)

14, 16, 24, 26 Connection terminal

16 Connection Terminal

18 Power-Source Tongue (Electric Power Switch)

20 60 Cradle

30, 50, 70 Adapter for cradles

32, 52, 72 Body of an adapter

34 54 Paries medialis orbitae (attaching part)

35 55 Paries lateralis orbitae (attaching part-ed)

78 Power-Source Actuation Heights (Power-Source Operating Member)

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[Translation done.]

**\* NOTICES \***

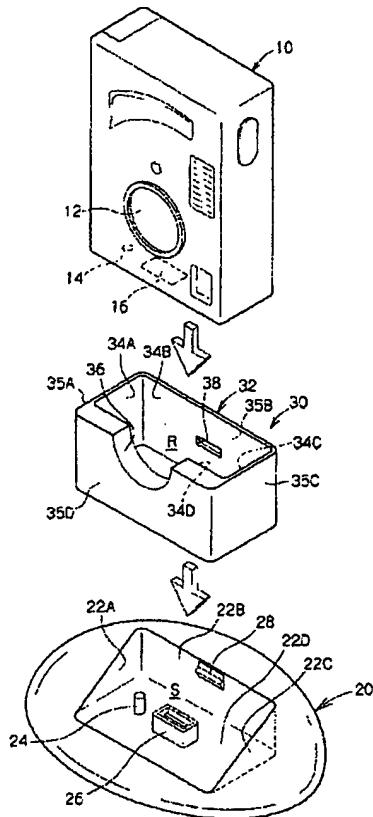
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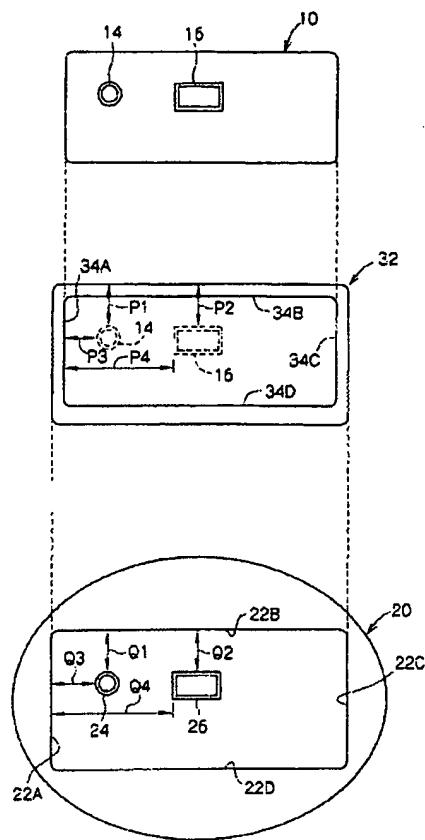
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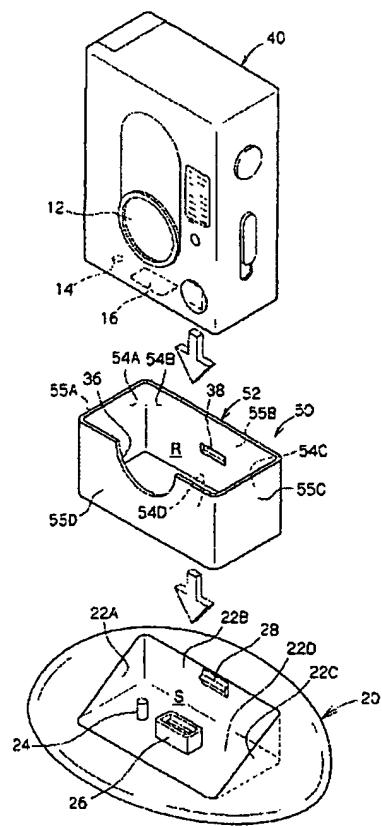
**DRAWINGS**

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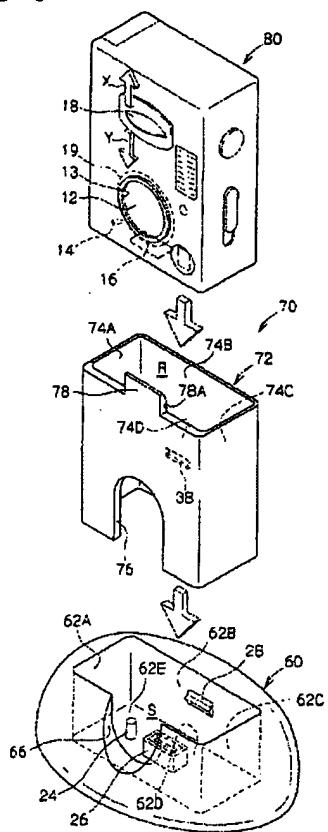
**[Drawing 1]****[Drawing 2]**



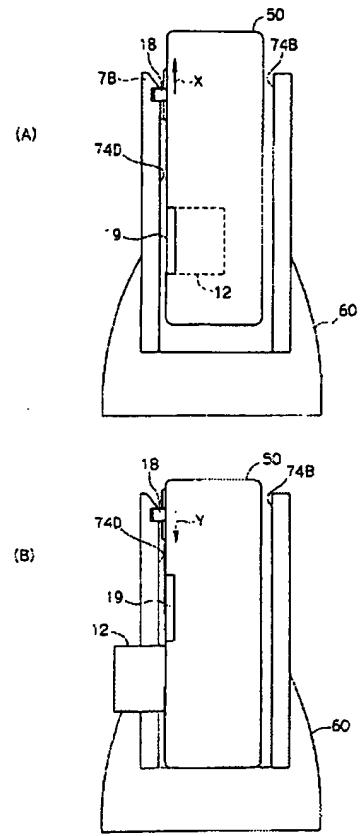
[Drawing 3]



[Drawing 4]



[Drawing 5]



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[Translation done.]